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Cedar Lake Volunteer Fire Department

The Unpaid Professionals
P.O. Box 459
Cedar Lake, Indiana 46303

Before the
Federal Communications Commission
Washington, DC 20544

In the Matter of	
Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing them.	PR Docket 92-235

To: The Commission

COMMENTS

Cedar Lake Vol. Fire Dept submits its comments in response to the Commission's notice of Proposed Rule Making in this proceeding, concerning:

1. Power Restrictions on Fixed Stations at Higher Elevations.

2. Channel Splitting.

3. Frequency Stability.

4. Consolidation of Private Land Mobile Radio Services.

Complete comments are provided on the following page.

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List A B C D E

1. **Power Restrictions:** This proposal, which would require licensees to reduce power depending on height above average terrain, is a two dimensional solution to a three dimensional problem that will not work and that we strongly oppose.

In most cases, high elevation transmitter sites are surrounded by natural obstacles such as other mountains. Environmental, economic and zoning concerns often prohibit use of the best transmitter site. Consequently, many transmitters are located miles away from the desired coverage area. To compensate for these factors, a licensee must use sufficient power to cope with geographic realities.

Air pollution and other exogenous factors can cause a dramatic loss of signal strength at the mobile receiver. Losses of 20 to 30 DB are frequently noted in the Los Angeles area during periods of high air pollution. Snow and ice on the antenna in winter can decrease the performance of the system as can foliage and trees during the growth season. Conditions around the receiver -- which, in a mobile unit, change continually -- often restrict reception. Clearly, radio systems must be designed to include sufficient reserve gain to have the dynamic range to reach its mobile receivers undiminished by variable environmental factors.

Under the Commission's proposal, specifying licensed output in terms of effective radiated power (ERP) would impose a subjective theoretical standard on the real world where it well may not be applicable. Line loss, antenna gain and directional distortions caused by the tower on which the antenna is mounted often will severely distort the realities of the equation.

At the present time, the mobile area of operation for many licensees is 75 miles around a base station or repeater. As this fact is recognized in existing licenses, the FCC should permit licensees to use adequate power to cover the area of operation specified in the license unaffected by to the unreasonably low power limits described in the notice of proposed rulemaking.

2. **Channel Splitting:** The Commission's proposal, to reduce spacing to 5 kilohertz (khz) in VHF and 6.25 khz in UHF, is incompatible with mobile two-way radio systems. We strongly oppose this proposal unless and until new technology is tested, proven and readily available. These band widths are inappropriate because:

First, mobile communications begin and end with human speech. An extremely narrow bandwidth does not convey the audio quality and intelligibility needed to communicate speech effectively. Unless users are willing to utilize only non-voice data transmissions, channel spacings of 5 or 6.25 khz are unrealistic.

Second, channel spacings of 5 or 6.25 khz will result in interference to and from adjacent channels. Such channel spacings now work with microwave multiplex equipment only because those systems operate with carefully controlled, identical power levels. With continuously changing power levels encountered in mobile systems, interference will reach unacceptable levels.

Third, existing FM specifications provide proven, reliable and accepted standards for the industry. However, there is no standard for the type of equipment required by this proposal. Only one manufacturer has type-accepted equipment for the 220 band on which these technical standards apply. That

equipment, which is single side band (SSB), is unacceptable to most users because of its poor audio quality. Moreover, this equipment has not been proven on a large scale as no licenses have been issued on the 220 band. Although long available for the 150 band, it has not gained wide-spread acceptance due to poor voice quality. The cellular telephone industry is now testing both digital and analog time-division equipment in an effort to develop standards for narrow band transmission. Reports indicate that those systems that have been installed are providing less than satisfactory results.

We oppose implementation of channel spacings of 5 and 6.25 khz on the 150 to 512 bands until: such standards have been proven on the 220 band; an industry consensus has emerged for technology that meets these standards; and, manufacturers have proven equipment ready to be marketed.

3. **Frequency Stability:** The FCC's proposal, which would tighten frequency stability to one part per million (PPM) on mobile units, serves no useful purpose. The difference in performance from existing equipment, particularly in the 150 to 174 mega-hertz band will not be apparent. No commonly available test equipment is capable of accurately measuring compliance with the fixed station standard of 0.1 ppm. We oppose this proposal as it will only serve to make obsolete all existing radios and to make new radios far more expensive.

4. **Frequency Coordination:** The Commission's proposal, which would cut the number of coordinators from 19 to three, would wreak havoc on the frequency coordination system. The current system, which developed over many years, is generally accepted as fair and efficient. It permits various industries as well as state and local governments to have reasonable assurance that they will be able to obtain a frequency when needed and have a voice in the rule-making process.

To take this system, which works well, and scrap it in favor of one in which three groups would exert dictatorial power from centralized locations over the nation's use of private radio frequencies is to invite inefficiency, conflict and abuse of power. In particular, industrial and commercial users of two-way radios would be at a disadvantage in the proposal as they would all be placed in a single pool for frequency coordination and might not be able to obtain frequencies when needed.

Although the current rules provide for licensing of cooperatives, this will be eliminated under the new proposal. These co-ops add efficiency to the licensing and coordination process. The presence of a *de facto* coordinator on the scene ensures that frequency utilization within the spectrum licensed to the co-op is optimized. Elimination of this provision of the rules will lead to major problems for many small scale users. Although there are some problems with the current

Before the
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FCC 92-469

In the Matter of	)	
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Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them	)	PR Docket No. 92-235

NOTICE OF PROPOSED RULE MAKING

Adopted: October 8, 1992 **Released:** November 6, 1992

Comment Date: February 26, 1993
Reply Comment Date: April 14, 1993

By the Commission: Commissioner Barrett issuing a separate statement.

I. Introduction

1. On July 2, 1991, we released a Notice of Inquiry (Inquiry) to gather information on how to promote more efficient use of the frequency bands below 512 MHz allocated to the private land mobile radio (PLMR) services.[1] Based on the input received in response to our Inquiry, today we are adopting this Notice of Proposed Rule Making (Notice) that contains a comprehensive set of proposals designed to increase channel capacity in these bands, to promote more efficient use of these channels, and to simplify our policies governing the use of these bands by a wide variety of small and large businesses and public safety agencies throughout this nation.[2] The magnitude of these proposed policy changes makes this an ideal time to create Part 88, and thus correct many unrelated deficiencies that exist in our current rules governing the PLMR services. The proposed rules are in many ways radically different from our current rules. We have, however, attempted to develop a new set of rules that are flexible and simple with regard to the technical and

scheme that increases channel capacity for PLMR users. We are also sensitive to the need for a reasonable transition period for users to convert their radio systems to newer, more spectrum efficient technologies. These proposals are complex and deserve the full time and attention of all interested parties. In sum, the Notice is a critical step in providing for the future communications needs of private land mobile radio users. We are, therefore, looking forward to their comments and any alternatives that they may have to the proposals we have developed for their consideration.

3. It may be helpful to outline how the proposals in this Notice are presented for consideration. The Notice itself merely presents our proposals in a broad and general form. Readers will find more detail regarding each of our proposals in Appendix A, which explains each major proposal. Readers should also carefully examine Appendix D, the proposed Part 88 that would replace Part 90. To assist in this detailed review, we have provided Appendix E, an index that cross-references proposed rules in Part 88 to current rules in Part 90.

II. Background

4. In the past seven decades, PLMR has become one of the largest, most important areas regulated by the Commission. When making new PLMR spectrum allocations, we have generally been innovative and required or induced industry to be innovative. The rules for the bands in use longest have often been amended, yet remain based on much earlier technologies and regulatory concepts. Many PLMR channels are now unacceptably crowded and our rules for certain bands are unacceptably archaic and convoluted. The Inquiry solicited comments on a wide range of technical and policy issues related to the use of the PLMR bands below 512 MHz, with the overall goal of developing modern rules to support future technologies.

5. We received over 120 comments and reply comments. The Private Radio Bureau, in cooperation with the Annenberg Washington Program, Communications Policy Studies, of Northwestern University, also sponsored a conference on this topic on November 14, 1991. Nearly all the commenters appreciated that the Inquiry was a necessary step for insuring that the long term communications needs of the PLMR community are met. Many comments highlighted the invaluable and irreplaceable need for radio spectrum for one and two-way mobile communications. Most commenters suggested that we proceed immediately to increase spectrum efficiency through technical changes as well as various policy changes. In preparing this Notice, we again carefully reviewed the existing environment, with the goal of determining the best possible regulatory framework.

III. Discussion

6. We propose below a series of major changes in the way we regulate the PLMR services below 512 MHz. There are four major proposals. First, we propose spectrum efficiency standards that should increase the capacity, in terms of number of available channels, of several bands by 300 to 500 percent. These standards would generally reduce channel spacing to 6.25 kHz or less, while at the same time providing technical flexibility. Second, we propose a channel exclusivity option in the bands above 150 MHz. This would